MoDOT Work-Zone Guidelines

Missouri Department Of Transportation

MoDOT WORK-ZONE-COORDINATION CONTACTS

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The Missouri Department of Transportation is changing its statewide work-zone guidelines to improve safety for motorists and highway workers, reduce traveler delays and frustrations, improve statewide consistency in work zones and make better use of MoDOT's resources.

With limited funding and a deteriorating transportation system, MoDOT is focusing more of its resources on preservation and maintenance. Because of this, more work is being done in traffic, meaning more possible conflicts between motorists and workers, as well as more possible delays for motorists.

These work-zone changes will require a culture shift within and outside the department. New strategies to meet our goals require a new mindset. MoDOT will not be conducting "business as usual" in its work zones.

These strategies are across the board from the bid-letting process to the day-to-day work in the zone. Each district and the headquarters staff will facilitate these new strategies in many ways. The new guidelines focus on:

SAFETY: It's our #1 value

CONVENIENCE: We'll reduce disruptions for motorists by:

- Shifting work to night and off-peak hours, when possible
- Managing multiple projects on a route at one time
- Setting appropriate speed limits

COMMUNICATION: We'll get the word out about upcoming projects and alternate routes

All guidelines are based on the latest Manual on Uniform Traffic Control Devices and MoDOT's Traffic Control for Field Operations Manual.

"There's a time for everything, and now is the time to change how we think about work zones," said Kevin Keith, MoDOT's chief engineer. "It's about what's best for the public. Time is money and we've got to improve our transportation system with the least amount of inconvenience to the motorist."

Roadway Capacities

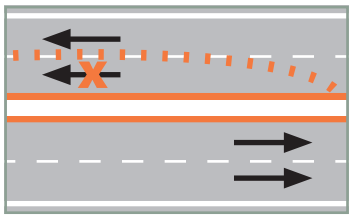
Work zones limit the amount of traffic that can travel a roadway, because of reduced speed limits, closed lanes and additional driver distractions. The following guidelines address these issues with different types of state routes to improve conditions while ensuring safety is the top priority.

The following table shows various open- and closed-lane scenarios with the expected vehicle capacities.

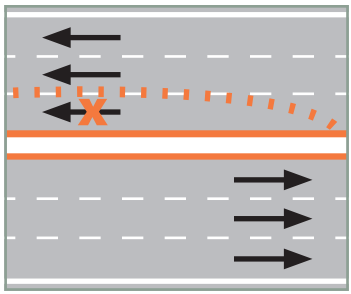
Interstate & Freeway Lane Conditions		**Capacity Restrictions**		**Cautionary Zone**	
total number of lanes	number of open lanes	vehicles per hour per lane **VPHPL**	total capacity in open lanes **VPH**	vehicles per hour per lane **VPHPL**	total capacity in open lanes **VPH**
3	**1**	**960**	**960**	**750**	**750**
2	**1**	**1240**	**1240**	**1000**	**1000**
5	**2**	**1320**	**2640**	**1000**	**2000**
4	**2**	**1420**	**2840**	**1100**	**2200**
3	**2**	**1430**	**2860**	**1100**	**2200**
4	**3**	**1480**	**4440**	**1100**	**3300**

Interstates and Freeways

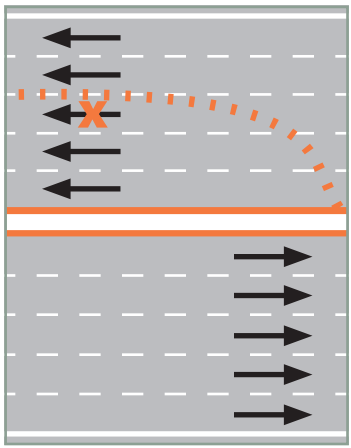
Interstates and freeways are high-volume multiple-lane routes divided by medians. These routes carry the largest volumes of traffic, and depending on the number of lanes, can affect thousands of vehicles per hour. By using the appropriate work-zone guidelines on these roadways, the biggest work-zone improvements can be made. The Highway Capacity Manual provides traffic-capacity information for urban freeway work zones. This information may also be used for rural freeways and interstates.



The most common interstate and freeway work-zone situation in Missouri is on a route with two lanes per direction, with one closed lane. This results in a maximum traffic capacity of 1,240 vehicles per hour. Strategies to reduce effects on the motoring public should be considered when traffic volumes approach 1,000 vehicles per hour per lane.



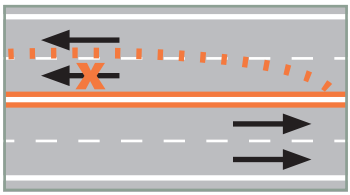
Where there are three lanes in one direction and one is closed, or where there are four lanes with one or two of those closed, the open-lane capacity is approximately 1,450 vehicles per hour. Strategies to reduce effects on the motoring public should be considered when traffic volumes approach 75 percent of the restricted capacity, or 1,100 vehicles per hour. Where there are three lanes in one direction and two are closed, the maximum capacity is approximately 960 vehicles per hour and strategies should be considered when traffic volumes approach 750 vehicles per hour per lane.



The greatest traffic reductions per lane occur when the situation is most restricted. For instance, if there are five lanes in one direction and three are closed, the capacity of the two open lanes is 1,320 vehicles per hour per lane. Strategies to reduce effects on the motoring public should be considered when volumes approach 75 percent of the restricted capacity, or 1,000 vehicles per hour per lane.

Multi-lane Roadways

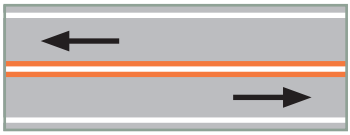
Multi-lane roadways also have more than one lane per direction, however, because most do not have medians, they must be treated differently than interstates and freeways.



The work-zone capacity of multi-lane roadways is approximately 1,000 vehicles per hour per lane. Strategies to reduce effects on the motoring public should be considered when volumes approach 80 percent, or 800 vehicles per hour per lane.

Two-lane Roadways

Work zones for two-lane roadways need to be reviewed on a case-by-case basis. Although these routes have the lowest traffic volumes, they also do not have medians and may have narrower shoulders and more curves than higher-volume routes.



Strategies to reduce effects on the motoring public should be considered when volumes approach 300 vehicles per hour per lane.

Missouri Work Zones Can Be

- On City, County or State Roadways
- During the Day and at Night
- Construction
- Roadway Maintenance
- Snow Removal
- Mowing
- Bridge Inspection
- Emergency Repair
- Utility Work

Hourly Volume Tables

Tables showing the average hourly volumes are being developed currently. Call MoDOT's Transportation Planning Unit at (573) 526-8058 to obtain them. Transportation Planning will train staff members who need access to roadway-volume data.

Keep Missouri Moving Safely in Work Zones

In 2000, crashes caused 15 motorists' deaths and injured 838 in Missouri work zones. Forty-five of the injured were MoDOT employees. How can you help reduce these numbers and travel safely?

- Plan your trip - contact MoDOT for lane-closure information
- Stay alert
- Drive courteously
- Obey work-zone signs and flaggers' instructions
- Be patient – work today results in smoother roads tomorrow

Current Strategies to Improve Work Zones

There are many ways MoDOT can begin making work zones safer, while reducing delays and decreasing motorists' frustrations. In 2001, MoDOT began implementing several strategies to immediately make a difference.

A Statewide Work-Zone Coordinator

The statewide work-zone coordinator will organize lane closures and oversee work zones on the National Highway System so traffic runs smoothly, safely and effectively with the least amount of inconvenience to motorists. Responsibilities include:

- **Coordinating lane closures across district boundaries and across the state**
- **Considering the statewide impact of work zones to traffic**
- **Ensuring the statewide traffic effects of major sporting events, the state fair and other special activities are considered when planning work zones**

District Work-Zone Coordinators

Each of MoDOT's 10 districts will have a work-zone coordinator to organize lane closures within their district, and ensure work zones in their area run smoothly, safely and effectively with the least amount of inconvenience to motorists. Each district engineer will support the work-zone coordinators and ensure they implement these guidelines internally and externally. District work-zone coordinator responsibilities include:

- **Scheduling lane closures during off-peak and/or nighttime hours when possible, when traffic volumes exceed 75 percent to 80 percent of the open-lane capacity**
- **Scheduling work on multiple projects on the same route**
- **Working with Project Development to ensure that working days for projects requiring lane closures will be reduced, when possible**
- **Notifying the statewide work-zone coordinator before any lane closures on the National Highway System**
- **Using hourly volume tables from Transportation Planning to determine if lane closures will result in capacity traffic levels in the open lanes**
- **Collecting all proposed roadway project work from district staff**
- **Reviewing all maintenance and internal work-zone activities requiring lane closures**
- **Reviewing all commercial and utility/permit work-zone activities requiring lane closures**

Project Letting

Before any project is let, it will be reviewed by the Project Core Team to ensure MoDOT is taking the appropriate actions to reduce work-zone effects on the public. The project manager will ensure the following actions are considered:

- **Scheduling lane closures during off-peak and/or at nighttime hours, when possible**
- **Using incentive/disincentive contracting, A+B bidding and lane-rental contracting options when possible to reduce project completion time, when the traffic volume exceeds 75 – 80 percent of the open-lane capacity**
- **Evaluating and implementing schedules to reduce the number of working days needed to complete projects quicker**
- **Using road closures, when possible, to complete projects quicker**
- **Using signed detours, when a detour is convenient for the public**
- **Opening additional through lanes, to reduce traffic effects**
- **Ensuring work-zone speed limits are appropriate in active and non-active work zones**
- **Using hourly volume tables from Transportation Planning to determine if lane closures will result in capacity traffic levels on the open lanes**

MoDOT Roadway Maintenance and Activities

All maintenance and internal work-zone activities requiring lane closures will be reviewed by the district work-zone coordinator to reduce the work-zone effects on motorists. The district engineer will ensure that the appropriate district staff considers the following actions when scheduling lane closures:

- **Notifying the district work-zone coordinator 48 hours before beginning any non-emergency work requiring a lane closure**
- **Scheduling lane closures during off-peak and/or nighttime hours, when possible**
- **Ensuring work zones are maintained in a neat, orderly and effective manner for the safety of highway workers and motorists**
- **Scheduling multiple tasks in a single work zone, rather than scheduling multiple lane closures in the same area**
- **Making every effort to minimize traffic backups**
- **Ensuring the appropriate traffic-control equipment is used**

Commercial Utility/Permit Work

All commercial and utility or permit projects will be reviewed by the district work-zone coordinator to reduce work-zone effects on motorists. The permit staff will ensure the following actions are considered:

- **Notifying the district work-zone coordinator 48 hours before any work requiring a lane closure begins**
- **Scheduling lane closures during off-peak and/or nighttime hours, when possible**
- **Inspecting all work zones and ensuring traffic-control plans are implemented, or work will halt**
- **Ensuring work zones are maintained in a neat, orderly and effective manner for the safety of highway workers and motorists**
- **Scheduling multiple tasks in a single work zone, rather than scheduling multiple lane closures in the same area**
- **Making every effort to minimize traffic backups**

Active Construction Project Work Zones

All active construction work zones will be reviewed by the appropriate MoDOT resident engineer and the district engineer will ensure the following actions are taken:

- **Notifying the district work-zone coordinator 48 hours before any work requiring a lane closure begins**
- **Working with the contractor to ensure lane closures are minimized**
- **Making every effort to minimize traffic backups**
- **Ensuring all contract specifications, special provisions and work restrictions are enforced**
- **Ensuring all work zones are neat, orderly and effective for the safety of highway workers and motorists**
- **Ensuring work-zone speed limits are appropriate in active and non-active work zones, as outlined in the Traffic Management Plan**

Future Strategies to Improve Work Zones

MoDOT is also working on several other strategies to improve work zones for highway workers and motorists. Although most of these strategies are still in the planning stages, they may include the following:

1. Develop process to ensure work-zone speed limits reflect actual conditions

- Activity vs. non-activity may mean two different speed limits
- Eliminate current work-zone speed chart
- Use more on-site speed studies or specific project evaluations

2. Develop statewide work-zone coordination process

- Develop online database identifying major events
- Develop off-peak work-hour guidelines
- Develop one electronic request form for all work-zone activities
- Develop mapping tool

3. Develop process to include incident-management principles in state wide work-zone planning

- Include all service providers and internal staff in scoping, design and construction
- Use contractor-provided motorist assist
- Include emergency turnouts

4. Develop a "toolbox" to inform travelers about work zones pre-trip, enroute, and in work zones

- Website
- Radio
- Changeable message signs
- Future in-vehicle devices
- Future 511 service

5. Develop decision-making process for development of traffic-management plans

- Create new policy
- Develop training sessions
- Include public at earliest stage and present Traffic Management Plan options, may involve more than one hearing
- Consider road closures, when possible
- Use traffic-modeling software

6. Develop and implement alternative contracting methods, guidelines, training

- A + B bidding contracting
- Earlier completion date
- Appropriate and continuous number of working days
- Incentive/disincentive contracting
- Lane-rental contracting
- Weekend-only work, including total road closures

7. Change all policies and guidelines to reflect new work-zone philosophy and processes

- Project Development manual
- Operations manual
- Spec book
- Permit/utilities manual
- Work Zone Quality Standards Manual
- Project Operations manual

8. Develop and implement training courses for Traffic Management Planning

- Maintenance employees
- Project Operations employees
- Traffic employees
- Contractors/Consultants
- Designers
- Utility providers

9. Develop expectations for work-zone oversight

- New training – all MoDOT employees are responsible for improving work zones
- Require formal evaluation process
- Include sign with 888-ASK MODOT in each work zone, to encourage comments
- Ensure all customer-service centers have appropriate work-zone contacts

10. Develop and implement change process for work zones when current plan is not working

- Reevaluate
- Take appropriate steps

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1-888-ASK MODOT (275-6636)

www.modot.state.mo.us